

NEW JERSEY COLLEGES:



Future engineers, Pat Oberding of Irvington, and Reinhard Baars, Long Branch, chat in doorway of Eberhardt Hall on terraced High St. campus overlooking downtown Newark. Afterdark view (right) shows building alight for 1,200 students seeking bachelor degrees, an additional 700 after master's and another 1,200 on special courses.

By JOHN T. CUNNINGHAM

FORTUNATELY for Newark College of Engineering, a college can no more be judged by its facade than a book can be judged by its cover. The familiar outward face of NCE is outmoded red brick Weston Hall, 60 years old and looking every tired year of it, but behind that time-stained face is one of the finest engineering schools in the land.

Soon, certainly by 1960, Weston Hall will be just a sentimental memory, replaced by a handsome and completely modern six-story structure. Then Newark College of Engineering will be as easy to spot along High St. as its prominent neighbor, Central High School. Then Newark College of Engineering can well afford to be judged by its facade as well as by its academic excellence.

Nevertheless, the new building won't affect one way or another the college's long-standing philosophy that New Jersey's young men and women with technological abilities must be

given the chance to become engineers, regardless of their financial means. Seen in that light, Weston Hall doesn't look too bad to thousands of students seeking only a chance, it long has been the pleasant face of hope and opportunity.

NCE is a public institution, supported jointly by city and state funds. Tuition is about \$350, relatively low for New Jersey. Nearly all students board at home and few expect any of the "frills" of a spreading campus. They recognize and appreciate the simply stated function of their urban college: To develop good engineers "at the lowest cost consistent with highest quality."

QUALITY education in an engineering college is tied intimately to laboratory facilities, and that is where the old-fashioned exterior of Weston Hall tends to be particularly misleading. Up on the hill behind Weston, housed in buildings noted for their usefulness rather than their architectural

distinction, is the college's laboratory nerve center. Labs range from huge general facilities to small and highly specialized laboratories tucked away wherever room permits.

What NCE can or will do in the face of the worsening critical nationwide shortage of engineers must be attuned to the current \$3,000,000 building program. This includes not only the Weston Hall replacement but also a six-story structure to be built in the rear of Eberhardt Hall, the college's administration building on the north side of Central High.

Twelve sparkling new stories might seem to be the answer to any college president's dream but the new buildings can't permit expansion of the NCE student body by very much. Al-

ready some 4,500 students (70 per cent of whom are seeking degrees) are enrolled in the day and night programs. Daytime undergraduate enrollment, now about 1,400, probably can't be expanded to more than 1,900, college administrators say.

Dr. Robert W. Van Houten, president, points out that expanded enrollment in an engineering college is not just a matter of adding classrooms. More important, he says, are the laboratory facilities available in junior and senior years. Equally important is the difficulty faced in recruiting additional faculty members capable of teaching in an engineering college.

THE current building program will be finished in two stages. First to be

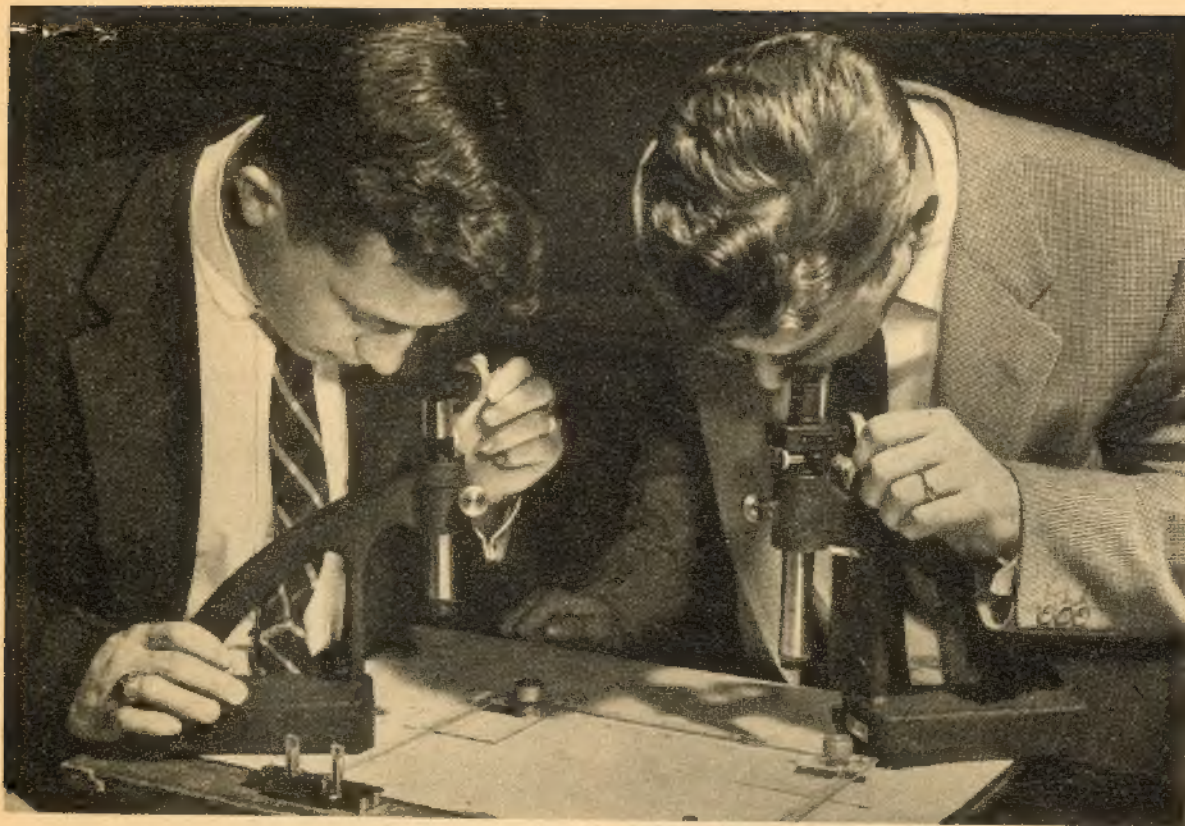
A TECHNOLOGICAL INSTITUTE FOR ALL

Interest and Ability, Not Financial Means, Govern Entry of Young Men and Women at the Newark College of Engineering, One of Finest in Country, Where Humanistic Studies at Day and Night Sessions Account for Degree Winners Who Are More Than 'Walkie-Talkie Slide Rules'



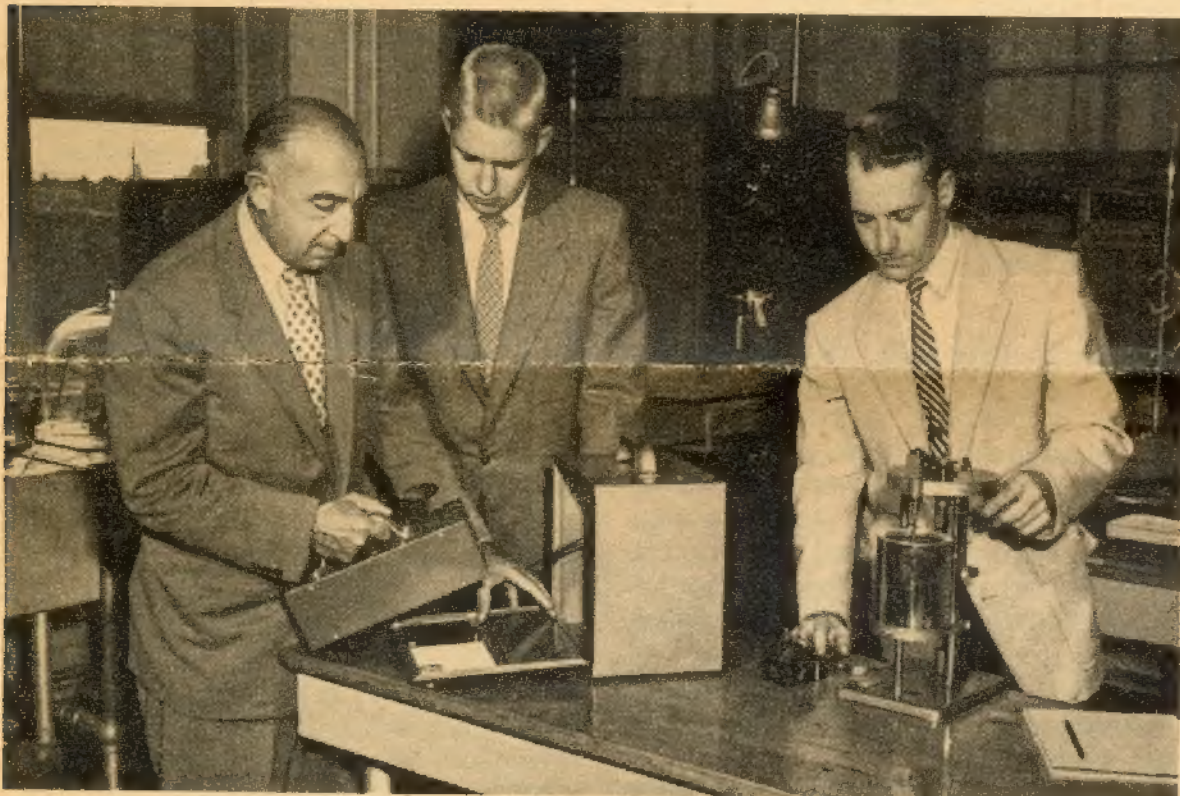
This is the 20th of a series of articles which not only describe New Jersey's colleges and universities, but tell the story of the growth and traditions of individual colleges within the state, picture their roles in modern education and explain how they plan to meet what has been called "an impending tide of students."

Next Sunday: Fairleigh Dickinson College.



Civil engineering students use Beggs Deformeter units to determine distortion of plastic model of rigid frame. Study is useful in ascertaining stresses in actual structures such as highway overpasses.

Chemistry Professor Frederick W. Bauder (below), industrial coatings and paint technology expert, demonstrates Glossmeter use on painted square in Mallaly Memorial Laboratory. Viscosimeter (right) measures fluidity of paint. Prof. Bauder is also basketball coach.



completed, probably by 1957, will be the structure behind Eberhardt Hall. Then Weston Hall will be demolished to make room for its six-story successor. Both buildings should be finished by 1960 and then, Dr. Van Houten declares, the college can take another look to see what the future holds.

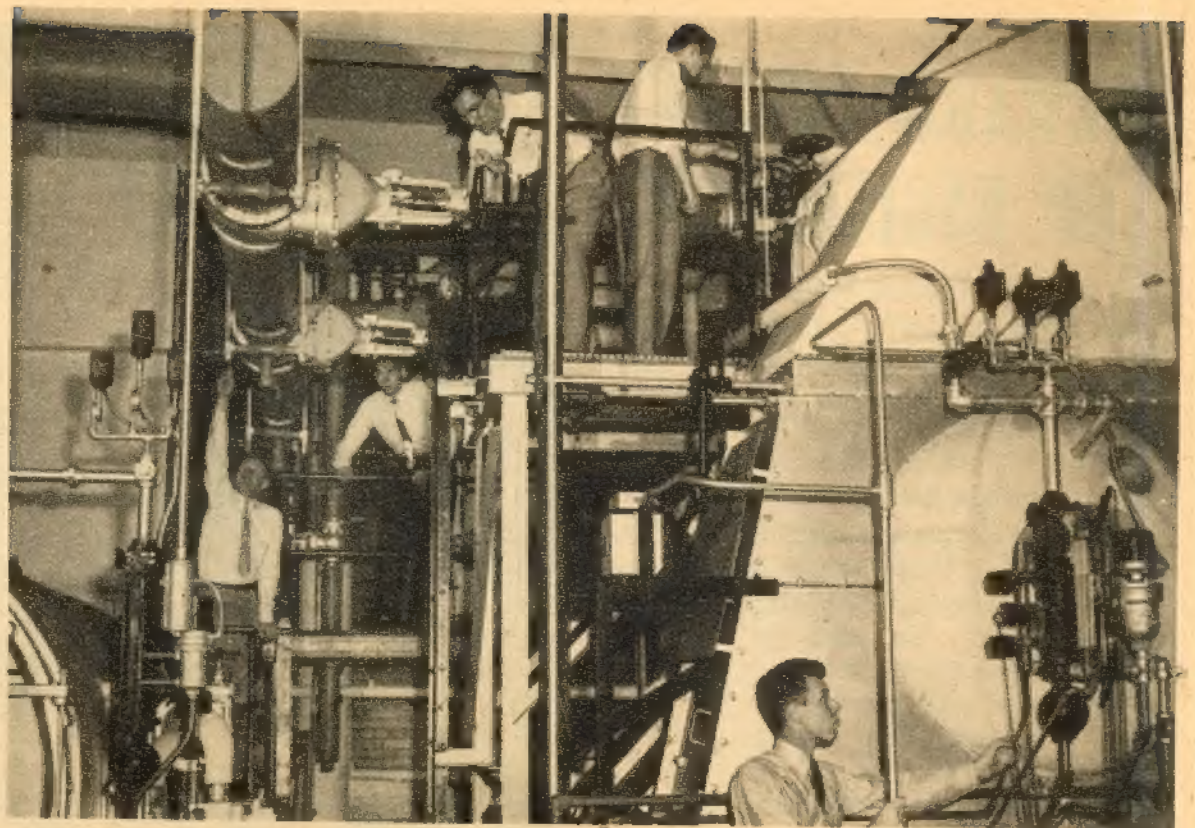
These 12 stories will bring NCE reasonably up to par as far as facilities are concerned, and not a minute too soon. As long ago as the late 1930s the college recognized its physical limitations and in 1940 plans were drawn for a 20-story tower of engineering knowledge to be erected on the Weston Hall site. Acquisition in 1946 of the old Newark Orphanage (Eberhardt Hall) property caused college trustees to think of two buildings rather than one tower.

Even if the two new buildings permit no spectacular enrollment growth, the new facilities will help the college faculty fulfill its traditional desire to develop engineers who are also well-rounded men (or women, since about one of every 100 students is a

co-ed). The new facilities will include 41 classrooms, 15 laboratory areas, a new library, an enlarged cafeteria, an auditorium and a commons. Thus the college will offer both a better engineering environment and better social surroundings.

Better social surroundings are important, since Newark College of Engineering was among those engineering colleges which pioneered the belief that if he is to succeed an engineer ultimately must know as much about humans as machines. This is a fundamental part of the college philosophy, shaped in large measure by Dr. Allan R. Cullimore, dean and president from 1920 to 1949 and now president emeritus.

THE needs of the great industrial region centering on Newark naturally guided NCE during the years after its founding in 1919. No one questioned that, of course, since not until recent years did engineers roam from coast to coast following the bright will-o'-the-wisp of high-flown salary offers. Twenty or so years ago a Newark Col-



Mechanical engineering seniors, working as a team, make boiler test of college's high pressure units used to supply steam to labs. About 20 per cent of all engineers in Newark area are NCE graduates.

Electrical engineering students (below) make adjustments of "slotted lines" to determine the length of radio waves. Knowledge gained here has many applications, including testing of high-frequency radio transmitters. Demand for qualified engineers is nationwide.



lege of Engineering graduate found employment close to Newark, just as the founders felt he should. Today offers pour in from coast to coast.

That tradition of being trained to work close to home derived from the college's early root—the Newark Technical School, authorized by the Legislature in 1881. Prof. Charles A. Colton became director in 1884 and in February 1885 the first Newark Tech students crowded their way into the tiny building the school had leased in West Park St.

The 1881 legislation permitted the state to allocate "at least \$3,000 and not more than \$5,000" to the Newark school—if Newark would raise a matching sum. Most of the matching money came from private citizens until 1888, when someone either deviously or accidentally inserted "\$5,000" instead of the usual "\$500" in Newark's annual money resolution. The city aldermen voted "aye," and two-thirds of them, according to a newspaper account, "thought \$5,000 was the regular fee."

EVENTUALLY city and state support settled down to a pro-rata basis according to the residency of students (a still-used formula). Meanwhile Prof. Colton in 1890 purchased "the Hedges place" on quiet and pleasantly residential High St. There in 1896 he built a grand hall of technical education which later was named Weston Hall to honor Edward Weston, Newark inventor and befriender of the school from its earliest days.

Prof. Colton, fitting the school's program to the city's growing industrial might, opened day classes in 1897 to supplement the evening curriculum. Courses at Newark Tech attracted no laggards some courses (decorative jewelry design or building construction, for example) took five full years to complete—at three hours every night, five nights every week.

Paradoxically, the sharp rise of vocational education between 1912 and 1918 almost doomed Newark Tech, since the start of vocational high schools lessened the need for Tech's

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NEWARK COLLEGE OF ENGINEERING

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day classes. Prof. Colton recognized the school must move on to higher things, and soon after erection of a new four-story laboratory building behind Weston Hall in 1911, he talked of a technical college for Newark.

College lay in the immediate offing, Prof. Colton knew when he tendered his resignation in 1918 after 34 years as director. He had no intention of relinquishing leadership entirely, therefore, until he saw his successor clearly established. He resigned as director but he didn't leave; he became librarian so that he could keep tabs on the school.

Dr. Daniel R. Hodgson headed Newark Tech in the one-year transition period when state legislation in 1919 established "The College of Engineering of Newark Technical School." Thirty-eight men entered classes in 1919 and 12 of them followed the rigorous course through to graduation. Dr. Hodgson meanwhile accepted another position, and to succeed him in 1920 the trustees chose Dr. Cullimore, young dean of the College of Engineering at the University of Delaware.

ALTHOUGH he could have been "president" immediately, Dr. Cullimore chose to be just "dean" until an enrollment of 400 merited a president. Dr. Cullimore took hold of the struggling little college, guided it through the troubled 1920s, nourished it through the depressed 1930s and made it vital in the wartorn 1940s. His personality and philosophy is firmly woven through the fabric of NCE.

At the start, Newark College of Engineering conducted a cooperative work-study program in conjunction with local firms. Teams of two students, assigned to specific industries, went through junior and senior years rotating on a month-in-industry,



Dr. Allen R. Cullimore, president emeritus, and Dr. Robert W. Van Houten, president, talk with engineering students on steps of Weston Hall, built in 1896 and named for the Newark inventor and early friend of the school. Building will be torn down for new structure.

month-in-school basis. The plan had unquestioned values—it gave a student on-the-job experience, it helped him earn his way through college and it interested many industrialists in the college.

Despite these values, the cooperative work-study plan encountered difficulties. During the depression years many employers hesitated to hire students who might keep family heads out of jobs. Moreover, it became increasingly difficult to coordinate class work and industrial experience. Accrediting agencies suggested that a

five-year program be instituted if the cooperative plan continued.

The school-wide cooperative plan was abandoned in 1940, although it persists in greatly altered form in an "Honors Option" plan whereby top-ranking sophomores and juniors are placed in summer pre-engineering positions in local industries. In return, the honor students must discuss and evaluate their experiences before scheduled class sessions in their junior and senior years.

As the cooperative plan faded, NCE placed ever-greater emphasis on what

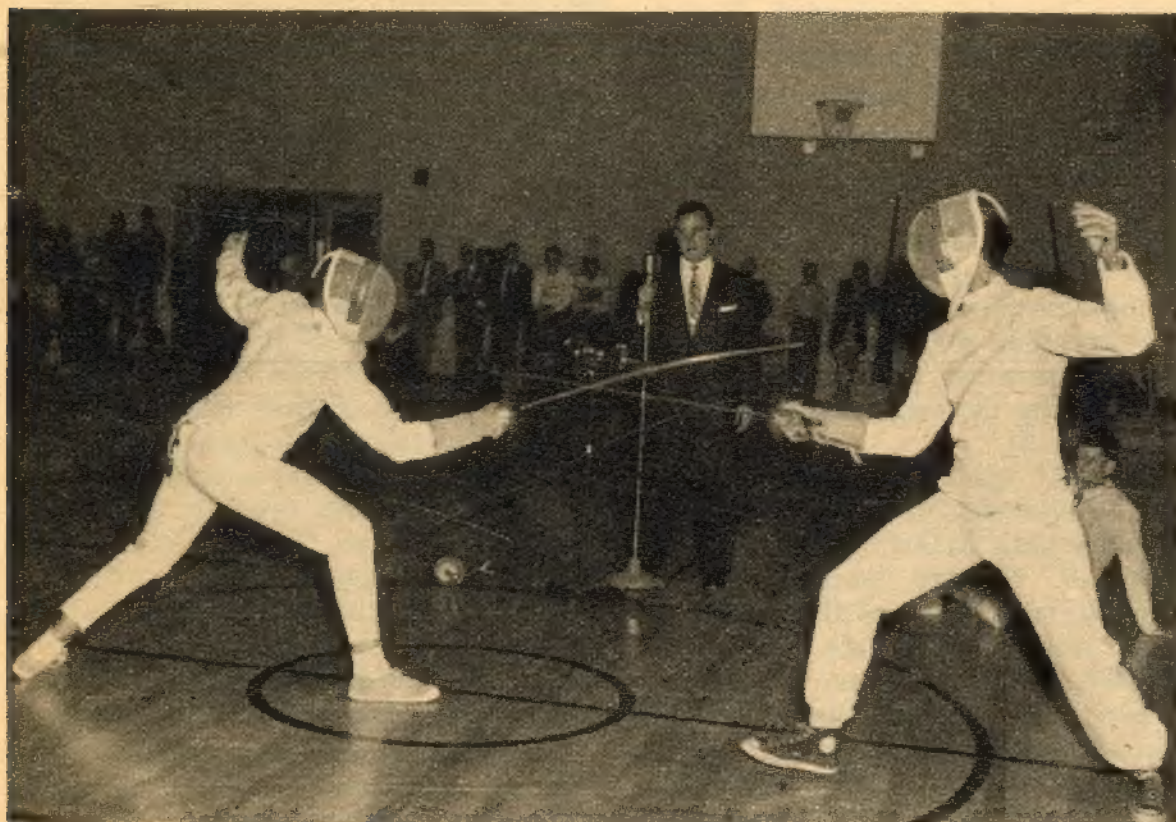
the college has come to call "professionalism." This is a definite hallmark of a Newark College of Engineering education. In simple terms, it means the preparation of a student to take his place in society, not only as a competent and skilled engineer but also as a competent and sensitive citizen of his community.

PROFESSIONALISM was stressed under Dr. Cullimore and it is stressed today under Dr. Van Houten, who succeeded Dr. Cullimore in 1949 after serving 19 years as a teacher and administrator at NCE. Professionalism is many things—it is proper dress at all times, it is the honor pledge signed to all examinations, it is a thorough groundwork in engineering fundamentals, and it is as much emphasis on the humanities as can be squeezed into the tight academic schedule.

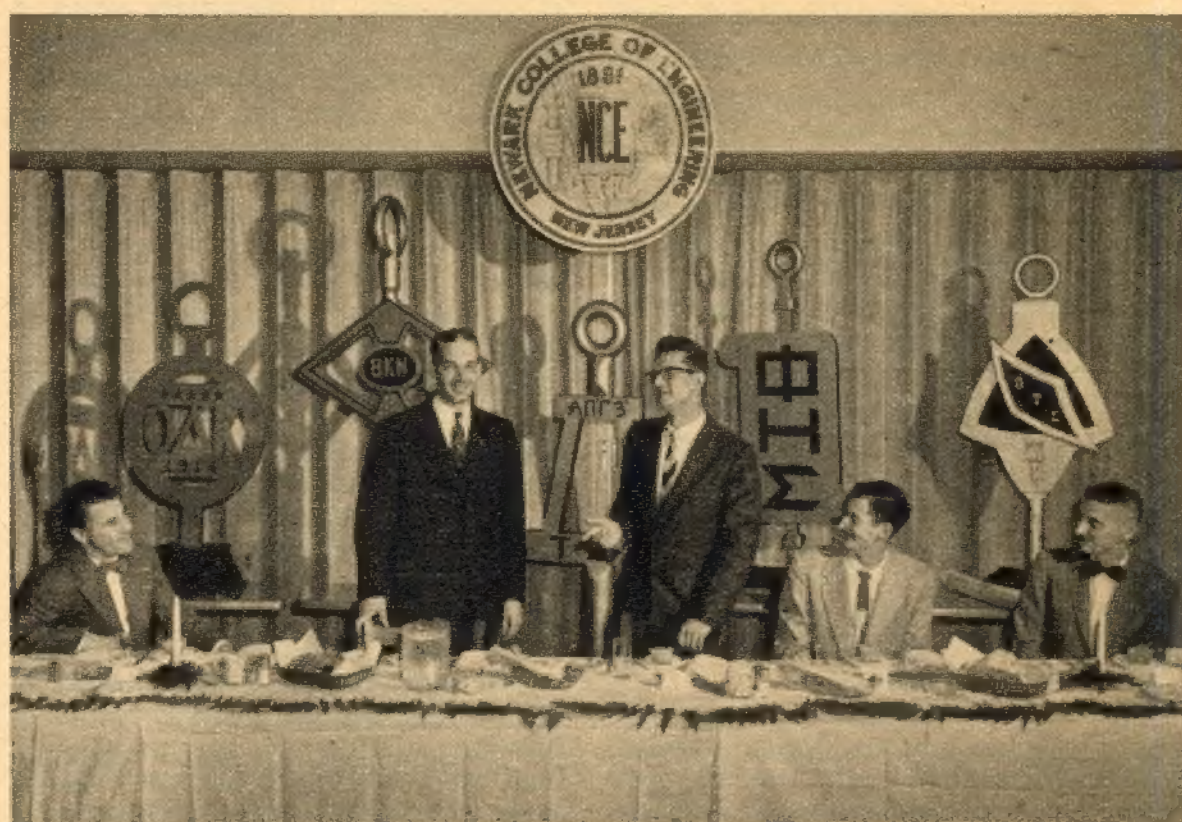
Academic preparation is exacting and it is thorough, make no mistake about that. NCE awards the bachelor of science degree in four engineering fields—civil, mechanical, chemical and electrical—but it expects its graduates to be prepared for a wide range of industrial challenges. With that in mind, every student gets a general course of engineering study in his first two years and concentrates on a specific field in his junior and senior years.

There is no possibility of compressing into a few words what a Newark College of Engineering students endures academically. However, consider that it is not at all unusual for a student to take 28 to 32 hours a week in classroom or laboratory courses, compared with the usual 15 to 18 hours in a liberal arts college. Consider that for every hour of classroom or laboratory a student must put in about the same amount of time in study if he keeps pace.

That adds up to about 60 hours of classroom and laboratory work and study every week. Add to that the time taken for commuting (students come from as far away as Newton and the Jersey Shore) and it doesn't leave a fellow much time for sleeping and eating, let alone living a little. Yet,



At NCE, where athletes actually pay to play, fencing is one of most popular sports. Since 1949 its teams have won 55 meets and lost 9.



At annual Honor Societies Dinner for new members, the council president presents William Hazell Jr., administration dean, as speaker.



Dr. Achille Capecelatro (lower left), executive associate of NCE's Department of Physics, demonstrates apparatus used in atom studies.

strangely enough in view of the apparent roadblocks, NCE has one of the most far-reaching and successful extra-curricular programs to be found among engineering colleges.

THE NCE undergraduate can choose from some 65 activities, including athletics, clubs, publications, fraternities and professional or honor societies. Every activity springs from the desire of students; every faculty adviser or coach is chosen by students. In return, students supply every cent of the money to run the program. They raise the funds, plan their own individual club budgets and then live within the money allocated by the student council. In the process they learn a great deal.

Athletes obviously get no subsidies at NCE. Indeed, no man plays on a team unless he first buys a student activity ticket, meaning that athletes at the college actually pay to play. Coaches at NCE consider themselves fortunate to practice two afternoons a week, yet the red-and-white clad Highlanders are a power in North Jersey's small college circles. Year in and year out the college wins 60 to 70 per cent of all its intercollegiate contests. Particularly remarkable is the success of Fred Bauder, chemistry professor who has coached basketball 21 years—and only twice has had a losing season.

The college administration wishes undergraduates to participate in extra-curricular activities, yet recognizes the difficulties involved. The work load is heavy enough, but with present buildings the problem also involves the task of communicating with students to keep them constantly informed of what is going on both academically and socially.

VISITORS immediately catch some of the problem as they tour the labyrinth of connecting hallways in the laboratory building (built in 1911), in Campbell Hall (built 1926), Campbell Hall Annex (built 1930) and the laboratory extension (built 1946). These separate buildings all appear to merge into one huge five-story building be-

hind Weston Hall. So devious are the linking corridors that freshmen are given intricate floor-by-floor maps to guide them.

Once he gets used to his surroundings, a Newark College of Engineering student quickly accepts as normal such odd arrangements as a gymnasium on the fifth floor and showers and dressing rooms in the basement or a wooden catwalk across the roof of one building as a passageway between two other buildings. Acceptance of surroundings is part of the orientation to NCE life, and, in a broader sense, to the life a student will face as an engineer.

Everything at the college is pitched to that after-graduation career. All freshmen and sophomores take full-length courses called "Principles of Engineering," which in reality are courses on the human factors in engineering. Juniors and seniors take courses called "Staff Control," featuring reports by "Honors Option" students who have worked in industry during sophomore and junior summer vacations. All seniors take a course describing various careers in engineering. In their four-year stay at NCE, students hear lectures from authorities on everything from anthropology to taxation, from art to propaganda.

The "humanizing" process extends through four years. All freshmen and sophomores study "humanistic-social" courses (e.g., English, history, philosophy) and juniors and seniors can elect such courses if time permits. The college earnestly seeks to round out a man and to broaden his viewpoints so that when he graduates he will be something more than a walking slide rule or a talking mechanical brain.

CLOSELY allied to the "humanizing" is a careful program of testing and guidance. Students are urged to seek counseling when necessary and the faculty is asked to refer to the guidance department students who need help. Infractions of rules are stringently checked, even when minor, in the knowledge that an habitual corner-cutter can never develop into a sound and ethical engineer.



Student cadets of the Air Force ROTC unit demonstrating use of air speed indicator to members of Newark's Civil Air Patrol squadron.

All this leads up to commencement day when engineers-to-be stand and recite an exacting engineer's oath, written by Dr. Cullimore and starting: "I have a deep and abiding respect and faith in the ideal of my chosen profession . . ." Degree day is even more significant at NCE than at most colleges, since it is an inspiration realized for hundreds of people who might have felt they couldn't make the financial grade.

It is the day when many young men of little or no financial means receive a degree they might well have felt denied them by economic circumstances. It is the day when four years of unrelenting study all becomes worthwhile. It is the day when parents and wives and children and even grandchildren gather to see a member of the family receive a degree after completing a drawn-out evening degree program that would frighten many a man who thinks himself academically sound.

Those night students are a group set apart. There are about 1,200 of them now seeking bachelor of science engineering degrees, and the very earliest they can hope to complete the course at night is eight long years. Some require as many as 12 to 15 years, taking fewer subjects in a year. These are students who work all day, who are generally married, who have great responsibilities over and above school. These are people who desperately desire an education and who are willing to struggle for it.

NEWARK College of Engineering shines at night. In addition to the undergraduate degree program nearly 700 students are studying for master's degrees in the after-dark graduate school. Another 1,200 students are in the midst of special courses not leading to degrees. NCE is an old hand at special courses; during World War II the college's reputation for such instruction led Princeton University to seek its advice in setting up some non-degree technical studies.

Newark College of Engineering graduates experience no difficulty in getting jobs, not a startling statement

in these days when engineers are passionately wooed by big industry. Last spring the NCE graduate received offers averaging \$380 per month and some bids went well over \$500 a month. Offers came from all over the nation, unlike the old days when NCE men almost automatically worked in or near Newark. At that, however, about 20 per cent of all engineers in the Newark area are NCE graduates.

Weighing the merits of the education on High St. is partially accomplished by seeing what the Middle States Assn. of Colleges and Secondary Schools said in accrediting the college two years ago. Middle States enthusiastically praised the "excellent" purposes and objectives. It commended the "very high use factor of classrooms and laboratories," but criticized the inadequate plant facilities.

"Considering the high quality of the faculty and student body," the report stated, "the college should be provided with more adequate space and facilities to do its job because it is serving its constituency well by providing a good quality of engineering in both day and evening classes in a great industrial community." The new building program, planned before the report was issued, will ease this criticism of facilities.

GRANTING the excellence of the technical preparation, there is also at hand a slant on how "human" NCE graduates are. In 1954 the class of 1929 was asked to evaluate itself after 25 years out of school. The summary, in deference to the fact that the class of 1929 graduated the year the stock market collapsed, was titled, "The Egg That Wall Street Laid."

After 25 years, the class of '29 man averaged \$8,620 annually, liked his job reasonably well, owned a seven-room house, was graying and adding weight, liked sports moderately, spent his evenings reading, watching television or doing odd jobs around the house.

He sounded like a capable and dedicated engineer and in his community this "Egg That Wall Street Laid" must have been like the man next door everyone knows—all things considered, a pretty darned good egg.